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IS 6364 (1993, Reaffirmed 2007): Spices and  
Condiments--Tamarind Pulp--Specification (Second Revision).  
UDC 664.5 : 634.461



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(Reaffirmed 2007)

IS 6364 : 1993

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भारतीय मानक

मसाले एवं मसाले – इमली गूदा – विशिष्ट

( दूसरा पुनरीक्षण )

*Indian Standard*

SPICES AND CONDIMENTS — TAMARIND  
PULP — SPECIFICATION

( *Second Revision* )

UDC 664.5 : 634.461

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BUREAU OF INDIAN STANDARDS  
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NEW DELHI 110002

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Price Group 2

## FOREWORD

This Indian Standard ( Second Revision ) was adopted by the Bureau of Indian Standards, after the draft finalized by the Spices and Condiments Sectional Committee had been approved by the Food and Agriculture Division Council.

Tamarind pulp is commonly used as a spice and condiments. Pulp is made from mature fruits of *Tamarindus indica*, commonly known as tamarind or *IMLI*, by removing first the rind and then the fibrous skeleton enclosing the pulp and the seed. The pulp is then sun-dried and compressed into cakes.

This standard was originally published in 1971 and revised in 1979. In this revision, the Spices and Condiments Sectional Committee has taken into consideration the latest technological developments in the field and incorporated additional requirements of total tartaric acid and total reducing sugars.

This standard is also subject to the restrictions imposed under the *Prevention of Food Adulteration Act, 1954* and the *Rules* framed thereunder, wherever applicable.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values ( revised )'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

# Indian Standard

## SPICES AND CONDIMENTS — TAMARIND PULP — SPECIFICATION

### ( Second Revision )

#### 1 SCOPE

This standard prescribes the requirements and the methods of sampling and test for tamarind pulp, obtained from the mature fruits of *Tamarindus indica*.

#### 2 REFERENCES

The following Indian Standards are necessary adjuncts to this standard:

| IS No.       | Title                                                                 |
|--------------|-----------------------------------------------------------------------|
| 1797 : 1985  | Methods of test for spices and condiments ( <i>second revision</i> )  |
| 4941 : 1974  | Extracted honey ( <i>first revision</i> )                             |
| 5955 : 1993  | Spices and condiments — Tamarind concentrate — Specification          |
| 13145 : 1993 | Spices and condiments — Methods of sampling ( <i>first revision</i> ) |

#### 3 TERMINOLOGY

**3.1** For the purpose of this standard, the following definitions shall apply.

##### 3.1.1 Extraneous Matter

It includes inorganic foreign matter, such as sand, earth and dust; and organic foreign matter, such as leaf, stem, fibre, rind or any other vegetable matter ( including tamarind seed ).

#### 4 REQUIREMENTS

##### 4.1 General

The tamarind pulp shall be obtained from the mature fruits of *Tamarindus indica*, by removing first the rind, then the fibrous skeleton enclosing the pulp and the seeds. The pulp shall be well dried and compressed into cakes. The colour of the cakes shall be uniform. The pulp shall have the characteristic taste and flavour, and shall be free from any obnoxious odour.

NOTE — If demanded by the overseas purchaser, molasses or jaggery or sodium chloride may be added during processing. Such addition(s) should be declared with the percentage(s).

##### 4.2 Freedom from Moulds Insects, etc

Tamarind pulp shall be free from visible insects and moulds, and shall be practically free from dead insects and contamination by rodents, visible to the naked eye, corrected if necessary in any particular case. In case the magnification exceeds X 10, this fact should be stated in the test report.

**4.3** The requirements for tamarind pulp shall be as given in Table 1.

#### 5 PACKING

**5.1** The material shall be packed in any of the containers described below:

- a) Polyethylene bags;
- b) Closely woven bamboo baskets, preferably lined with polyethylene or palmyra mat;
- c) Sound jute bags, preferably lined with polyethylene; and
- d) Wooden boxes lined with palmyra mats.

**5.2** The containers shall be sound, clean, dry and free from insect infestation or fungal contamination and shall not impart any undesirable smell.

#### 6 MARKING

Each container shall be marked or labelled with the following particulars:

- a) Name of the material and grade designation,
- b) Variety or trade name;
- c) Batch or code number;
- d) Net mass; and
- e) Date of packing.

#### 7 SAMPLING

**7.1** The method of drawing representative samples of the material and criteria for conformity shall be drawn according to Annex C.

#### 8 TESTS

**8.1** Seedless tamarind pulp shall be tested according to 4 and 5 of Table 1.

**Table 1 Requirements for Tamarind Pulp**  
( Clause 4.3 )

| Sl No. | Characteristic                                                                       | Requirement | Method of Test, Ref to |                           |
|--------|--------------------------------------------------------------------------------------|-------------|------------------------|---------------------------|
|        |                                                                                      |             | Annex of This Standard | Other Indian Standards    |
| (1)    | (2)                                                                                  | (3)         | (4)                    | (5)                       |
| i)     | Moisture, percent by mass, <i>Max</i>                                                | 20          | A                      | —                         |
| ii)    | Tamarind seed content, percent by mass, <i>Max</i>                                   | 3           | B                      | —                         |
| iii)   | Extraneous matter, percent by mass, <i>Max</i>                                       | 1.0         | —                      | Cl 5 of IS 1797 : 1985    |
| iv)    | Acid insoluble ash, ( on dry basis ) percent by mass, <i>Max</i> ( <i>see</i> Note ) | 0.50        | —                      | Cl 9 of IS 1797 : 1985    |
| v)     | Total tartaric acid                                                                  | 9           | —                      | Annex D of IS 5955 : 1993 |
| vi)    | Total reducing sugar, percent by mass, <i>Min</i>                                    | 35          | —                      | Annex C of IS 4941 : 1974 |

NOTE — For estimation of acid insoluble ash the material shall be completely free from seeds.

## ANNEX A

[ Table 1, Item (i) ]

### DETERMINATION OF MOISTURE

#### A-1 GENERAL

**A-1.0** Either of the two methods, toluene distillation or drying in vacuum oven may be followed. Toluene distillation method ( *see* IS 1797 : 1985 ) shall be a referee method for settling disputes, whereas vacuum oven drying may be adopted as a routine method.

#### A-2 VACUUM OVEN DRYING METHOD

##### A-2.1 Apparatus

##### A-2.1.1 Flat-bottom Dish

Of nickel or other suitable material not affected by boiling water, 7 to 8 cm in diameter and not more than 2.5 cm deep, provided with a short glass stirring rod having a widening flat end.

##### A-2.1.2 Sand

Which passes through 500-micron IS Sieve and is retained on 180-micron IS Sieve. It shall be prepared by digestion with concentrated hydrochloric acid, followed by thorough washing with water till free from chlorides. It shall then be dried and ignited to dull red heat.

##### A-2.1.3 Vacuum Oven

##### A-2.2 Procedure

**A-2.2.1** Heat the dish containing about 20 g of the prepared sand and a stirring rod in the oven for about one hour. Allow to cool in an efficient desiccator for 30 to 40 minutes. Weigh

accurately about 2 g of the material into the tared dish. Add about 5 ml of distilled water in the dish and thoroughly mix the sand with the sample by stirring with the glass rod, smoothing out lumps and spreading the mixture over the bottom of the dish.

**A-2.2.1.1** Place the dish on a boiling water-bath for 30 minutes, then wipe the bottom of the dish and transfer it to the vacuum oven maintained at a temperature between 60 and 70°C and at a pressure of not more than 6.7 kPa ( 50 mm of mercury ).

**A-2.2.1.2** After 2 hours, remove the dish to a desiccator, allow to cool and weigh. Replace the dish in the oven for a further period of one hour, remove to the desiccator, cool and weigh again. Repeat the process of heating, cooling and weighing after every one hour till consecutive weighings do not differ by more than 0.5 mg.

##### A-2.3 Calculation

**A-2.3.1** Moisture, percent by mass 
$$= \frac{100 ( M_1 - M_2 )}{M_1 - M}$$

where

$M_1$  = mass, in g, of the contents of the dish before drying;

$M_2$  = mass, in g, of the contents of the dish after drying; and

$M$  = mass, in g, of the empty dish with the sand and the glass rod.

## ANNEX B

[ Table 1, Item (ii) ]

## DETERMINATION OF SEED CONTENT

**B-1** Thoroughly mix the sample and weigh 500 g of the sample. Separate seeds, preferably by a knife and forceps. After separation of seeds, free them of any adhering pulp. Weigh the seeds and report the percentage.

## ANNEX C

( Clause 7.1 )

## SAMPLING AND CRITERIA FOR CONFORMITY

## C-1 GENERAL REQUIREMENTS OF SAMPLING

**C-1.1** In drawing, preparing, storing and handling samples, care should be taken that the properties of the material being sampled are not affected.

**C-1.2** The sample shall be placed in suitable containers on which the material has no action.

**C-1.3** Each sample container shall be sealed airtight with a stopper or a suitable closure after filling in such a way that it is not possible to open and reseal it without detection and marked with full details of sampling, the date of sampling, the name and address of the person drawing the sample, name of the material, the grade, the variety and the year of production.

## C-2 SCALE OF SAMPLING

## C-2.1 Lot

All the containers in a single consignment of material pertaining to the same variety, year of production and grade, shall constitute a lot. If consignment is declared or known to consist of different varieties, grade and produce of different years, the containers belonging to the same variety, grade and year of production shall be grouped together and each such group shall constitute a separate lot.

**C-2.1.1** Each lot shall be tested for ascertaining the conformity of the material to the requirements of this specification.

**C-2.2** The number ( $n$ ) of containers to be selected from the lot in a stationary stock shall depend on the size of the lot and shall be in accordance with col 1 and 2 of Table 2.

Table 2 Number of Containers to be Selected for Sampling

( Clause C-2.2 )

| Lot Size      | No. of Containers to be Sampled |
|---------------|---------------------------------|
| (1)           | (2)                             |
| 2 to 50       | 2                               |
| 51 to 150     | 5                               |
| 151 to 300    | 8                               |
| 301 to 500    | 10                              |
| 501 to 800    | 13                              |
| 801 and above | 20                              |

**C-2.3** These containers shall, as far as possible, be selected at random from the lot and in order to ensure the randomness of selection, a random number table as agreed to between the purchaser and the vendor shall be used. In case, such a table is not available, the following procedure shall be adopted:

Starting from any container, count them 1, 2, 3, ..... up to  $r$  and so on. Every  $r$ th container thus counted, provided it is stacked in a place which is accessible and convenient for handling the container with ordinary labour, shall be withdrawn from the lot to give a sample for test where  $r = N/n$ ,  $N$  being the total number of containers in the lot and  $n$  the number of containers to be selected ( see Table 2 ). In case  $r$  comes out to be a fractional number, its value shall be taken to be as equal to the integral part of it.

**C-2.4** When the containers are in transit, sample containers may be drawn at the time of loading or unloading of the containers. For this purpose the number of containers to be selected shall also be in accordance with

Table 2. The value of  $r$  shall be calculated as in C-2.3 and every  $r$ th container while in motion, shall be removed for getting a test sample.

### **C-3 TEST SAMPLES AND REFEREE SAMPLES**

#### **C-3.1 Preparation of Test Samples**

The containers selected according to C-2.2 shall be completely emptied and the contents mixed thoroughly by suitable means. Sub-samples shall be taken from different sides and various depths ( top, middle and bottom ) with clean hands so as to yield a total of about 2 kg of sample. The sample so drawn shall again be mixed thoroughly and minced. From this composite sample, a final sample, of 1 kg shall be taken and further divided into three equal parts. Each part thus obtained shall constitute a test sample. The test sample shall be transferred immediately to thoroughly clean and dry containers and sealed air-tight. They shall be labelled with the necessary particulars ( see 5.3 ).

#### **C-3.2 Test Samples for Purchaser and Vendor**

One of the test sample ( see C-3.1 ) shall be for the purchaser and another for the vendor.

#### **C-3.3 Referee Sample**

The third test sample ( see C-3.1 ) bearing the seals of the purchaser and the vendor or their representatives when they are present at the time of sampling or of the person, who sampled the lot, shall be the referee sample. It shall be used in case of a dispute between the purchaser and the vendor and shall be kept at a place agreed to between the purchaser and the vendor.

### **C-4 CRITERIA FOR CONFORMITY**

**C-4.1** The test sample shall be tested for the various characteristics of this specification.

**C-4.2** A lot shall be declared as conforming to this specification when each of the test result of the test samples satisfies the corresponding requirement of this specification.

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### Amendments Issued Since Publication

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**AMENDMENT NO. 1 JANUARY 1994  
TO  
IS 6364 : 1993 SPICES AND CONDIMENTS —  
TAMARIND PULP — SPECIFICATION  
( *Second Revision* )**

[ *Page 2, Table 1, Sl No. (v), col 2* ] — Substitute the following for the existing:

‘Total tartaric acid, percent, *Min.*’

( FAD 9 )

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Reprography Unit, BIS, New Delhi, India

**AMENDMENT NO. 2 NOVEMBER 1994**  
**TO**  
**IS 6364 : 1993 SPICES AND CONDIMENTS —**  
**TAMARIND PULP — SPECIFICATION**  
**( *Second Revision* )**

( *Page 1, clause 2* ) — Delete 'IS 13145 : 1993 Spices and condiments — Methods of sampling ( *first revision* )'.

[ *Page 2, Table 1, Sl No. (iii), col 5* ] — Substitute 'Cl 4' for 'Cl 5'.

[ *Page 2, Table 1, Sl No. (iv), col 5* ] — Substitute 'Cl 8' for 'Cl 9'.

(FAD 9)

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Reprography Unit, BIS, New Delhi, India